Latest CCR Affecting this Ticket: (for database administrator use only)
Latest CCR DATE Affecting this Ticket: (for database administrator use only)

Ticket : RH_ZZ_01 (With L4 Mappings)
ASTER Ingest Via Sony DTF-2

Launch Criticality: (release) EOC

Review: (subsystems affected) INGST, STMGT, SO

Priority: TBD

Number of Tracked Ticket Changes: (for database administrator use only)

Ticket CCR Number*: (for database administrator use only)

Ticket CCR Date*: (for database administrator use only)

* Represents changes to information from Ticket table only. Does not include information linked in from other tables.

NOTE: The number of tracked changes (above) represents the number of changes to this particular Ticket. Whenever the data appearing in this Ticket changes this number is incremented by 1.

External Interface Dependency:

This ticket defines capabilities to receive ASTER L1A and L1B data from the Japanese Ground Data System (GDS) for the ASTER instrument on Terra. The data is transmitted via a Sony DTF-2 tape. A test data tape will be provided from the ASTER GDS to support integration and test. This tape will be provide through ESDIS and the Science Office test data group. However, additional simulated data tapes may be required to support testing and development.

Subsystem Dependency:

INGST, STMGT

Preconditions:

Before the capability can be developed or tested, the Sony DTF-2 drives need to be installed and the associated drivers configured. Additional disk space for this capability is required at the EDC DAAC. This will not impact development or testing in the EDF or VATC.

As described below under the heading "Transition Approach", DTF-2 tapes will be provided by

the GDS to be used for testing. Other tapes are expected to be produced by ECS for testing purposes that are consistent in structure and content to the tapes described in the criteria 10 and 20 below. Should the tapes from GDS be available in time to support the testing required by this ticket, and that are consistent with the tapes described by criteria 10 and 20 of this ticket, then the ECS produced tapes can reasonably be replaced by the GDS produced tapes for that testing. Should the GDS produced tape be available in time but not match the tape contents described in the Criteria 10 and 20, then these GDS produced tapes should be used to satisfy Criteria 70 and 80.

Differences from Previous Releases:

1 - Since drop 4PX, ASTER data ingest has been supported via D3 type tape. The DTF-2 tape will now be used.

Operations Concept:

1. ASTER Level 1A, Level 1B, and 1A browse will be produce at the GDS routinely and the data will be shipped to the EDC DAAC for storage and distribution. The data will be shipped to the EDC DAAC via Sony DTF-2 tapes. The Japanese system will be an SGI Origin 2100 running IRIX 6.5, using Sony DTF-2 drives.

2. EDC will receive, on average, 2 tapes of data per day to ingest - one L1A tape and one L1B tape. Tapes are not shipped daily so that on some days no tapes will be received and on other days several will be received.

3. Each DTF-2 tape received from GDS for ingest processing will contain up to 100 Gbytes (compressed - approximately 200 Gbytes uncompressed) of data. The capacity of a DTF-2 tape is 200 Gbyte uncompressed, 518 Gbytes, compressed.

4. Each tape will contain the equivalent of up to one day of data, either L1A or L1B. There may be up to 777 L1A scenes and L1A browse, or 310 L1B scenes on a tape. There is one scene per HDF-EOS file. Processed and reprocessed data can be mixed on a single tape. Nominal sizes (uncompressed) for L1A, Browse and L1B are as follows:

   L1A - 116 Mbytes
   L1A Browse - 144 Kbytes
   L1B - 125 Mbytes

5. The data is organized on the tape in the same manner as it is currently using D3 drives and tape, as is described in "Interface Control Document between EOSDIS Core System (ECS) and ASTER Ground Data System" (Doc. No. 505-41-34). A blocking factor of 256 Kbytes is used. The data is transmitted as a sequence of tar files. The first tar file contains only the PDR file. The PDR file describes the remaining tar files and granules contained within those tar files. All tar files, except the first and last will be between 0.5 and 2.0 Gbytes in size. Further:

   a. Files will be stored onto tapes by use of the UNIX tar command. The UNIX tar command will not use absolute path.

b. Files on the tape will be stored in the tar file without any file directories. The tar file will be created so that the total size of all the files contained in the tar file does not exceed 2GB. The tar files for L1A data will contain one or more L1A data granules and the corresponding Browse granules. The L1A data granule and its corresponding Browse will always be placed in the same tar file. The tar files for L1B data will contain only the L1B granules, one or more per tar file up to the 2 Gbyte limit.

c. The PDR file, as is described in the ICD, will contain the number of tar files for the tape. The PDR file will be contained in the first tar file of the tape. The first tar file will contain only the PDR file.

d. Files will be stored on the tape in chronological order within a tar file. The storage order between tar files can be of any order.

e. Level 1A and 1B Products will be stored on separate media.

f. DTF-2 tapes are always compressed by hardware when created by GDS and uncompressed by drive hardware when received and read by EDC DAAC.

g. All L1 re-processed products in a production unit (1 day) will be shipped on the same tape with first time processed products.

6. The format of the PDR, product granules and browse files are unchanged from the current definition as described in the ICD.

7. The file naming convention for the L1A, L1A Browse and L1B files is given in the ECS-ASTER GDS ICD, section 4.6.3.10. The format for the product granules is defined in the "ASTER Level 1 Data Products Specification (GDS Version) Version 1.2" (AG-E-E-2209-R02). The format of the browse product is defined in " ASTER Level 1 Browse Data Products Specification (GDS Version) Version 1.2" (AG-E-E-2213-R02). The file naming convention for the PDR is not defined in the current ICD. No naming convention is needed for the tar files.

8. When the tapes for a delivery of ASTER Level 1A and 1B Products have been completed, but prior to delivery, ASTER GDS will e-mail a Data Shipping Notice, one per tape that is shipped, prefixed with the standard header to the EDC DAAC via the SMC, as described in the ICD.

9. When the tapes have been received at EDC, the data ingest technician will ingest the data. The tapes can be ingested in any order. After the first tape is ingested, repeat the procedure for the second tape. The tape ingest procedures will be unchanged for the new DTF-2 devices. This includes procedures for failures during tape ingest.

10. At the conclusion of the Ingest, ECS will produce a PAN or PDRD message as appropriate and send these messages to the operator at EDC. These messages will be forwarded to GDS as emails. Coordination between EDC and GDS will occur to insure that any granules found unreadable on one tape will be included on subsequent tapes, or that a new tape is produced for ingest.

Operational Impact:

This capability will only be deployed to the EDC DAAC where ASTER L1A and L1B data are received and archived.

Other than the transition activities, it is expected that there will be minimal operational impact for the introduction of this capability. The tape ingest devices are changing, with other characteristics of ASTER tape ingest being the same. Some potentially minor changes to the GUIs are expected.

Transition Approach:

Disk space for staging from tape (400 Gbytes) will be made available at EDC.

Two Sony DTF-2 tape drives will be installed to be accessible from any mode. The tape drives will be configured. Training and documentation for the hardware will be made available to EDC operations at the time of installation.

New capabilities will be provided as a patch. Installation and transition instructions provided with the patch. No separate transition documents.

Patch installed and tested in the test modes (TS2, TS1) at EDC by the DAAC operations staff. DTF-2 capability will co-exist with the D3 ingest capability. Appropriate regression tests will be run to insure stability in TS2.

GDS will produce sample data tapes in DTF-2 format of normal daily output of ASTER L1A and L1B data. The amount and frequency of these sample data tapes will be negotiated with the Japanese by ESDIS. In addition routine production and distribution of ASTER L1A and L1B data on D3 tapes will continue. Both sets of tapes will be sent to EDC.

During this period, D3 tapes will be routinely ingested in the OPS mode. DTF-2 sample tapes will be ingested in the TS1 mode. When EDC operations is confident that the products received are correct and that ingest procedures are confirmed, installation and testing will proceed to the TS2 mode. Appropriate regression tests will be run to insure stability. Finally, the DTF-2 patch will be installed to the OPS mode. Subsequently, ingest of DTF-2 tapes will be into the OPS mode. Finally, when ingest via DTF-2 is stable, a patch to de-install the D3 ingest capability will be applied to the three modes at EDC one at a time: TS1, TS2 and OPS - with testing at each step to insure that the de-install of the D3 capability has not disrupted routine operations. The D3 drives will be de-installed from the EDC system first, then from the EDF. ESDIS will coordinate with EDC, EDOS and ASTER GDS to determine the date for transition to DTF-2 tape.

Note that it will be necessary to support D3 and DTF-2 concurrently for up to several months.

Comments:

Refer to the "Interface Control Document between EOSDIS Core System (ECS) and ASTER Ground Data System" (Doc. No. 505-41-34). This ECS-ASTER GDS ICD covers this capability.

The ingest requirement for ASTER L1A and browse data (777 scenes per day) and ASTER L1B data (310 scenes per day) is specified in the F&PRS. However, at the current time and for some time to come, the ASTER GDS will be reprocessing L1A data and browse products and sending those in addition to the forward processing L1A and browse. The total number of L1A scenes that will be ingested per day are on the order of 1200 scenes per day. The number of L1B scenes ingested per day will be less than the 310 scene per day requirement.

This capability was originally provided at drop 4PX using the D3 tape as the ingest medium. The capability is described in the ticket SM07.

The Level 3 and IRD requirements listed below for this capability are existing requirements. One new Level 4 requirement has been introduced. The existing Level 4 requirements that apply to this capability are listed below. The set of requirements as they are stated below capture the capability required. The method of implementation, however, has changed. This ticket provides the new criteria necessary to verify the capability.

Development Capability(ies):

Cap ID	Title	Description	Change Date
00032IN	Sony DTF Ingest	Transition from ASTER D3 Ingest to Sony DTF Ingest.	
00032ST	Sony DTF Ingest	Transition from ASTER D3 Ingest to Sony DTF Ingest.	

Level 3 Requirement(s):

L3 ID	L3 Text	Clarification	Category	Release	CCR Num
DADS0200	The ECS shall receive from the ASTER GDS the following: a. L1A and L1Bdata products b. Metadata associated with data sets c. Science	(none)	INS, SDSRV	Complete	99-0496

	Software				

IRD Requirement(s):

IRD ID	IRD Text	CCR Num
ASTER-0700	ASTER GDS shall have the capability to send and ECS (EDC DAAC) shall have the capability to receive science data products, including Level 1 data, ancillary data, metadata, and browse.	00-0447

Level 4 Requirement(s):

L4 ID	L4 Text	Release	CCR Num
S-INS-00790	The INGST CI shall ingest data, received on physical media from the ASTER GDS, into the EDC DAAC.	B0	99-0729
S-DSS-20000	The STMGT CI shall accept and store data files into the archive, as specified by requests received from the SDSRV CI.	B0	99-0729
S-DSS-00155	The SDSRV CI shall provide storage for the metadata associated with all data types specified in the Data Type Services Matrix.	B0	99-0729
S-DSS-03002	The SDSRV CI shall be capable of receiving and managing the storage of L0 - L4 Data, as requested by valid Data Insert Requests.	B0	99-0729
S-DSS-03292	The SDSRV CI shall provide the capability to process Data Insert Requests for the storage of the metadata and data (if any), for the data types specified in the Data Type Services Matrix.	B0	99-0729
S-DSS-03305	The SDSRV CI shall store Granule Inventory Metadata, specified by valid Data Insert Request, into the Metadata Database.	B0	99-0729
S-DSS-	The SDSRV CI shall direct the transfer of data files,	B0	99-0729

03308	specified by valid Data Insert Requests, to the STMGT CI.		
S-DSS-21357	The STMGT CI shall have the capability to transfer data from DTF-2 tape.	EOC	NEW
S-DSS-21374	The STMGT CI shall transfer data from ingest media as directed by the INGST CI.	B0	99-0729
S-DSS-21376	The STMGT CI shall provide the capability for the DDIST CI and the INGST CI to allocate devices used for the distribution and ingest of data via physical media.	6A	99-1176
S-DSS-21384	The STMGT CI shall provide operations staff the capability to manually mount media on stand alone data input/output devices used for media ingest and distribution.	6A	99-1176
S-DSS-21386	The STMGT CI shall provide operations staff the capability to manually unmount media from stand alone data input/output devices used for media ingest and distribution.	6A	99-1176
S-DSS-21492	The STMGT CI shall provide APIs to support the retrieval of data from devices used for the ingest of data from physical media.	B0	99-0729
S-INS-00130	The INGST CI shall interactively accept Hard Media Ingest Requests from operations staff for data to be ingested from hard media.	A	99-0729
S-INS-00140	The INGST CI shall check the Hard Media Ingest Request to verify that the Media Type is a type supported by the INGST CI.	A	99-0729
S-INS-00150	The INGST CI shall verify that the External Data Provider specified in a Hard Media Ingest Request is an authorized provider of hard media to be ingested.	A	99-0729
S-INS-03110	Upon ingest of ASTER L1B, the INGST CI shall populate meta-data attributes reflecting the ASTERMapProjection and Resampling used in producing the L1B product.	5B	00-0396

S-INS-03115	Upon ingest of ASTER L1B, the INGST CI shall populate the InputGranulePointer with the GDS ID of the L1A data granule extracted from the SourceDataProduct object.	5B	99-1269

L4 to L3 Mappings:

L4 ID	L3 ID	CCR Num
S-INS-00790	DADS0200	99-0729
S-DSS-20000	DADS0200	99-0729
S-DSS-00155	DADS0200	99-0729
S-DSS-03002	DADS0200	99-0729
S-DSS-03292	DADS0200	99-0729
S-DSS-03305	DADS0200	99-0729
S-DSS-03308	DADS0200	99-0729
S-DSS-21357	DADS0200	NEW
S-DSS-21374	DADS0200	NEW
S-DSS-21376	DADS0200	NEW
S-DSS-21384	DADS0200	NEW
S-DSS-21386	DADS0200	NEW
S-DSS-21492	DADS0200	NEW
S-INS-00130	DADS0200	NEW
S-INS-00140	DADS0200	NEW
S-INS-00150	DADS0200	NEW
S-INS-03110	DADS0200	NEW

S-INS-03115	DADS0200	NEW

L4 to IRD Mappings:

L4 ID	IRD ID	CCR Num
S-INS-00790	ASTER-0700	99-0729
S-DSS-20000	ASTER-0700	99-0729
S-DSS-00155	ASTER-0700	99-0729
S-DSS-03002	ASTER-0700	99-0729
S-DSS-03292	ASTER-0700	99-0729
S-DSS-03305	ASTER-0700	99-0729
S-DSS-03308	ASTER-0700	99-0729
S-DSS-21357	ASTER-0700	NEW
S-DSS-21374	ASTER-0700	NEW
S-DSS-21376	ASTER-0700	NEW
S-DSS-21384	ASTER-0700	NEW
S-DSS-21386	ASTER-0700	NEW
S-DSS-21492	ASTER-0700	NEW
S-INS-00130	ASTER-0700	NEW
S-INS-00140	ASTER-0700	NEW
S-INS-00150	ASTER-0700	NEW
S-INS-03110	ASTER-0700	NEW
S-INS-03115	ASTER-0700	NEW

Design Directive(s):

Design must allow concurrent support for D3 tape and DTF-2 tape ingest.

Criteria:

Criteria Key	Criteria ID	Criteria Text	Type	CCR Num
RH_ZZ_01	10	Prepare a simulated DTF-2 tape containing simulated ASTER L1A data and browse granules, organized as defined by the ECS-ASTER GDS ICD and as summarized above. The sizes of the simulated granules do not need to be comparable to the real granules (although this is required in later criteria). The metadata content of the granules should, however, be representative of real data. The tape should contain the numbers of granules and tar files that are received on a tape under worst case circumstances (777 L1A data granules and assoc. Browse granules), specifically: - 1 tar file with 1 PMPDR - 45 tar files containing 17 L1A granules and 17 L1A Browse granules (a mixture of original and reprocessed L1A granules/browse is acceptable). - 1 tar file containing 12 L1A granules and 12 L1A Browse granules (a mixture of original and reprocessed L1A granules/browse is acceptable). Following the procedures for ASTER tape ingests, ingest the data from the tape. Verify that: a.) All of the granules from the tape are correctly ingest to the archive. b.) All metadata for these granules is properly inserted to the inventory	FC	

		c.) A PAN message is produced and sent to the appropriate email address. d.) On the Monitor/Control tab of the Ingest GUI, inspect the status that has been recorded and confirm that it is correct.		
RH_ZZ_01	20	Prepare a simulated DTF-2 tape containing simulated ASTER L1B data granules, organized as defined by the ECS-ASTER GDS ICD and as summarized above. The sizes of the simulated granules do not need to be comparable to the real granules (although this is required in later criteria). The metadata content of the granules should, however, be representative of real data. The tape should contain the numbers of granules and tar files that are received on a tape under worst case circumstances (310 L1B data granules), specifically: - 1 tar file with 1 PMPDR - 20 tar files containing 15 L1B granules (a mixture of original and reprocessed L1B granules is acceptable). - 1 tar file containing 10 L1B granules (a mixture of original and reprocessed L1B granules is acceptable). Following the procedures for ASTER tape ingests, ingest the data from the tape. Verify that: a.) All of the granules from the tape are correctly ingest to the archive. b.) All metadata for these granules is properly inserted to the inventory c.) A PAN message is produced and sent to the appropriate email address. d.) On the Monitor/Control tab of the Ingest GUI, inspect the status that has been	FC	

		recorded and confirm that it is correct.		
RH_ZZ_01	30	Produce a tape similar to that described in criteria 10. However, modify the PDR file so that the TOTAL_TAPE_FILE_COUNT parameter-value is missing. Following the procedures for ASTER tape ingests, ingest the data from the tape. Verify that: a.) The ingest processing fails. The granules and metadata do not get inserted. b.) A PAN message is produced and sent to the appropriate email address indicating "Post-Transfer File Size Check Failure ". c.) On the Monitor/Control tab of the Ingest GUI, inspect the status that has been recorded and confirm that it is correct.	EC	
RH_ZZ_01	40	Produce a tape similar to that described in criteria 10. However, modify the PDR file so that the TOTAL_TAPE_FILE_COUNT parameter-value is greater than the actual value, i.e., greater than the number of tar files on the tape. Following the procedures for ASTER tape ingests, ingest the data from the tape. Verify that: a. The ingest processing fails. A message will pop up indicating this. The granules and metadata do not get inserted. b. On the Monitor/Control tab of the Ingest GUI, inspect the status that has been recorded and confirm that it is correct.	EC	
RH_ZZ_01	50	Produce or obtain a tape that is bad so that the tape drive will be unable to read the tape somewhere within the tape after the first tar file containing the PDR has been read. Following the procedures for ASTER tape	EC	

		ingests, attempt to ingest the data from the tape. Verify that: a. The ingest processing fails. The granules and metadata do not get inserted. b. A pop up message appears indicating that the ingest has failed. c. On the Monitor/Control tab of the Ingest GUI, inspect the status that has been recorded and confirm that it is correct.		
RH_ZZ_01	60	Use a tape similar to the one generated for criteria 10 but insure that the granules on the tape are correctly sized: L1A granules should be 116 Mbyte, L1A Browse should be 144 Kbyte. Ingest the tape as indicated in criteria 10. Then use a tape similar to the one generated for criteria 20 but insure that the granules on the tape are correctly sized: L1B granules should be 125 Mbyte. Ingest the tape as indicated in criteria 20. Verify that: a.) Items a, b, c, and d of criteria 10 and 20 are satisfied. b.) Verify that both ingest can be completed with 16 hours.	PC	
RH_ZZ_01	70	This is a conditional criteria. If a GDS produced test DTF-2 tape containing simulated ASTER L1A data and browse granules is available at the time at which the testing for this ticket is conducted, the testing required by Criteria 10 should be applied to that GDS tape. This is without regard to the number of granules and tar files contained on the GDS produced tape. Verify that all of the items of criteria 10 are satisfied.	FC	
RH_ZZ_01	80	This is a conditional criteria. If a GDS produced test DTF-2 tape containing simulated ASTER L1B data granules is available at the time at which the testing for this ticket is conducted, the testing required by	FC	

		Criteria 20 should be applied to that GDS tape. This is without regard to the number of granules and tar files contained on the GDS produced tape. Verify that all of the items of criteria 20 are satisfied.		
RH_ZZ_01	90	PMPDR Error conditions 2.5 Data provider request threshold exceeded (ref. Criteria 516)	EC	
RH_ZZ_01	100	PMPDR Error conditions 2.6 Data provider volume threshold exceeded (ref. Criteria 957)	EC	
RH_ZZ_01	110	PMPDR Error conditions 2.7 System request threshold exceeded (ref. Criteria 517)	EC	
RH_ZZ_01	120	PMPDR Error conditions 2.8 System volume threshold exceeded (ref. Criteria 518)	EC	
RH_ZZ_01	130	PMPDR Error conditions 2.9 Invalid Data Type (ref. Criteria 519)	EC	
RH_ZZ_01	140	Ingest and Archive error conditions 3.4 Metadata preprocessing error (ref. Criteria 524)	EC	
RH_ZZ_01	150	PMPDR Error conditions 2.12 Invalid File Type (ref. Criteria 958)	EC	
RH_ZZ_01	160	PMPDR Error conditions 2.10 Invalid File Size (ref. Criteria 520)	EC	